

DETAILED ACTION

Specification

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Combined Pretensioner- and Lock Gear for a Webbing Retractor

Abstract

The Abstract is objected to because the word "lock" is repeatedly, improperly written a "rock". Appropriate corrections are required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabinski et al (4,979,694) in view of Nagata et al (6,354,528).

Re: Claims 1 and 5, Grabinski et al disclose a webbing retractor comprising:

- a retracting shaft (11) for retracting a webbing belt for restraining an occupant;
- a lock mechanism (14 – 16) which includes a lock gear (14) with ratchet teeth (15) being formed at an outer peripheral face of the lock gear and a lock plate (16) disposed to be able to be engaged with the ratchet teeth of the lock gear, and which is structured to be able to prevent rotation of the retracting shaft in

a webbing pulling-out direction by the lock plate being engaged with the lock gear (Col. 4, L. 9 – 28);

- a pretensioner mechanism (10, 12) coupled to an end portion of the shaft, and which is structured to be able to forcibly rotate the retracting shaft in a webbing retracting direction; however,

Grabinski et al are silent with respect to a torsion bar and their pretensioner mechanism includes a sleeve.

Attention is directed to Nagata et al who teach their force limiter mechanism which includes a torsion bar (92, Fig. 11) having one end portion coupled to their retracting shaft (70), and which is structured to be able to absorb a rotating force of the retracting shaft in the webbing pulling-out direction when the rotation of the retracting shaft in the webbing pulling-out direction is prevented by their lock mechanism (82, 96, Fig. 21), and their torsion bar and a sleeve (78A) of their pretensioner mechanism that is provided integrally at an axial center portion of their force limiter mechanism, for feature of a "...small pretensioner and lock device of reduced number of parts (sic)..."

It would have been obvious to one of ordinary skill in the art to modify the reference of Grabinski et al with the teaching of Nagata et al for savings in space and costs.

Re: Claim 2, Grabinski et al are silent with respect to their pretensioner mechanism includes a sleeve.

Attention is directed to Nagata et al who teach their sleeve (78A) formed in a cylindrical shape coaxial with their pretensioner and lock gear (104 and 82, respectively), and an inner peripheral face of the sleeve is knurled (to accommodate 92B).

It would have been obvious to one of ordinary skill in the art to modify the reference of Grabinski et al with the teaching of Nagata et al for proper transfer of force.

Art Unit: 3654

Claims 3 - 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabinski et al in view of Nagata et al and in further view of Lee et al (6,513,747).

Re: Claim 3, Grabinski et al disclose a retracting shaft and pretensioner- and locking mechanisms; however, Grabinski et al are silent with respect to a torsion bar and their pretensioner mechanism having a sleeve as well as their pretensioner mechanism having a rack.

Nagata et al teach their pretensioner mechanism having rack (130, Fig. 14) which is provided on their piston (146, 132) that moves within their cylinder (136) by receiving gas pressure, as well as a pinion (104) which is disposed coaxially with their retracting shaft, in total comprising a pretensioning device as known in the art.

It would have been obvious to one of ordinary skill in the art to modify the reference of Grabinski et al with the teaching of Nagata et al for utility.

However, Nagata et al are silent with respect to a clutch plate.

Attention is directed to Lee et al who teach their pretensioner mechanism comprising a piston (164) which moves within their cylinder (163) by receiving gas pressure and a clutch plate (side of 214, Fig. 4B) which transmits a rotating force of their pinion (210) to their sleeve (122, Fig. 3), for feature of isolating their pretensioner mechanism from their shaft when their shaft is in a webbing pulling-out direction.

It would have been obvious to one of ordinary skill in the art to modify the reference of Grabinski et al and Nagata et al with the teaching of Lee et al for utility.

Re: Claim 4, Grabinski et al and Nagata et al are silent with respect to a clutch plate.

Attention is directed to Lee et al who teach their clutch plate (side of 214, Fig. 4B) further comprising a cam (angled portions of 214) for feature of isolating their pretensioner mechanism from their shaft when their shaft is in a webbing pulling-out direction while affording force transmission in a webbing pulling-in direction.

It would have been obvious to one of ordinary skill in the art to modify the reference of Grabinski et al and Nagata et al with the teaching of Lee et al for utility.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ebner et al (5,788,176) and Rees et al (6,460,935) are cited to webbing retractors having pretensioner mechanisms coaxial with locking mechanisms.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Krueer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Cuomo can be reached on 571.272.6856. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

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/Stefan Krueer/

Examiner, Art Unit 3654

8 June 2008

/Peter M. Cuomo/

Supervisory Patent Examiner, Art Unit 3654